What is claimed is:

1.   A method of managing storage of at least one item in a network of heterogeneous storage devices, the heterogeneous storage devices comprising a local storage device and one or more remote storage devices, the method comprising:

detecting a storage event, the detection being effected by the local storage device;

obtaining input information, the input information having parameter values related to the item and the heterogeneous storage devices; and

processing the input information to determine a storage assignment, the storage assignment being determined for storage of the item on one or more of the heterogeneous storage devices based on item-device suitability determined from a combination of at least one item selection rule and at least one storage selection rule.

2.   The method as recited in claim 1 wherein processing the input information if the event is an item addition event comprises:

determining suitability of the heterogeneous storage devices in the network for storing an added item, the added item being the item that is added to the local storage device; and

determining the storage assignment, the storage assignment comprising a list of destination storage devices, the destination storage devices being optimal locations for storing the added item.

3.   The method as recited in claim 1 wherein processing the input information if the event is an item optimization event comprises:

determining suitability of one or more remote items for storing the remote items on the local storage device, wherein the remote items are items located on the remote storage devices; and

5   determining the storage assignment, the storage assignment comprising a list of remote items for storing the remote items on the local storage device.

4.   The method as recited in claim 1 wherein processing the

10   input information if the event is a device full event comprises:

determining suitability of one or more local items for relocating the local items, wherein the local items are the items located on the local storage device;

selecting a list of local items that are to be relocated;

15   determining suitability of the remote storage devices for storing the selected local items; and

determining storage assignment, the storage assignment comprising a list of destination storage devices, the destination storage devices being the remote storage devices that are

20   suitable for storing the selected local items.

5.   The method as recited in claim 1 wherein the method further comprises storing the item on the heterogeneous storage devices in accordance with the storage assignment.

25

6.   The method as recited in claim 1 wherein the method further comprises avoiding a deadlock between storage assignments, the storage assignments being determined by two or more local storage devices in the network.

30

7.   A system for managing storage of at least one item in a network of heterogeneous storage devices, the system comprising:

an event detection module, the event detection module detecting storage events on the heterogeneous storage devices;

an input provider module, the input provider module providing item metrics and storage device metrics;

5   a decision engine, the decision engine being connected to the input provider module and the event detection module, the decision engine determining storage assignment, the storage assignment assigning the item to one or more of the heterogeneous storage devices based on item-device suitability;

10   and

a storage assignment implementation module connected to the decision engine, the storage assignment implementation module storing the item on one or more of the heterogeneous storage devices in accordance with the storage assignment.

15

8.   The system as recited in claim 7 wherein the input provider module is centrally implemented in the network of heterogeneous storage devices.

20   9.   The system as recited in claim 7 wherein the input provider module is implemented on each storage device in the network.

10.   The system as recited in claim 7 wherein the decision engine comprises a policy module, the policy module comprising:

25   at least one item selection rule;

at least one storage selection rule; and

rules for preventing a deadlock between storage assignments.

30   11.   The system as recited in claim 7 wherein the decision engine is centrally implemented in the network of heterogeneous storage devices.

12.   The system as recited in claim 7 wherein the decision engine is implemented on each storage device in the network.

13.   A computer program product for use with a computer, the computer program product comprising a computer usable medium having a computer readable program code embodied therein for managing storage of at least one item in a network of heterogeneous storage devices, the heterogeneous storage devices comprising a local storage device and one or more remote storage, the computer program code performing:

    detecting a storage event on the local storage device;

    obtaining input information, the input information having parameter values related to the item and the heterogeneous storage devices; and

    processing the input information to determine a storage assignment, the storage assignment being determined for storage of the item on one or more of the heterogeneous storage devices based on item-device suitability determined from a combination of at least one item selection rule and at least one storage selection rule.

14.   The computer program product as recited in claim 13 wherein the computer program code performing the processing of the input information if the event is an item addition event comprises a computer program code for performing:

    determination of suitability of the heterogeneous storage devices in the network for storing an added item, the added item being the item that is added to the local storage device; and

    determination of the storage assignment, the storage assignment comprising a list of destination storage devices, the

destination storage devices being optimal locations for storing the added item.

15. The computer program product as recited in claim 13 wherein the computer program code performing the processing of the input information if the event is an item optimization event comprises a computer program code for performing:

      determination of suitability of one or more remote items for storing the remote items on the local storage device, wherein the remote items are items located on the remote storage devices; and

      determination of the storage assignment, the storage assignment comprising a list of remote items for storing the remote items on the local storage device.

16. The computer program product as recited in claim 13 wherein the computer program code performing processing of the input information if the event is a device full event comprises a computer program code for performing:

      determination of suitability of one or more local items for relocating the local items, wherein the local items are the items located on the local storage device;

      selection of a list of local items that are to be relocated;

      determination of suitability of the remote storage devices for storing the selected local items; and

      determination of the storage assignment, the storage assignment comprising a list of destination storage devices, the destination storage devices being the remote storage devices that are suitable for storing the selected local items.

17. The computer program product as recited in claim 13 wherein the computer program code further performs prevention of a

deadlock between storage assignments, the storage assignments being determined by two or more local storage devices in the network.